CLAIMS

What is claimed is:

1. An interactive device for r ceiving visual inputs from an environment and providing responses based upon the inputs, comprising:

an image sensor for capturing an external image of an object;

an image similarity engine for comparing the external image to a plurality of stored images, the image similarity engine providing a similarity score based on the comparison of the external image to a stored image; and

an event processing engine for creating a new event when the similarity score is bigger than or equal to a predefined threshold score, the event processing engine executing an event action associated with the new event.

2. The interactive device of claim 1, further comprising:

an audio sensor for capturing an audio command; and

a voice recognition engine for processing the audio command, the processed audio command being sent to the event processing engine.

3. The interactive device of claim 1, further comprising:

a database managing engine for receiving data requests from the event processing engine; and

a database for storing event data.

4. The interactive device of claim 1, further comprising:

a mechanical input processor for receiving mechanical inputs from the user;

a clock for providing timing functions to the event processing engine; and

a range finder for determining the distance between the video sensor and the object.

5. The interactive device of claim 1, further comprising:

a speech synthesiz r; and

a speaker.

6. The interactive device of claim 1, wherein the event processing engine further comprising:

an event recognizer for creating a new event object for the new event and placing the new event object into an event queue;

an event queuer for managing the event queue;

an event conflict resolver for resolving conflicts between event objects placed in the event queue; and

an event handler for handling events in the event queue.

7. The interactive device of claim 1, wherein the event processing engine further comprising:

a category editor for creating new category for the new event;

an object editor for creating a new object for the new event;

a reaction editor for creating reactions for the new event; and

an event editor for defining new events.

8. The interactive device of claim 1, further comprising an event table, where the event table includes

a plurality of triggering conditions; and

at least one event action.

9. The interactive device of claim 1, wherein the image sensor is a video camera.

10. The interactive device of claim 1, wherein the image similarity engine further comprises a fractal based unconstrained image understanding processor.

11. The interactive device of claim 1, wherein the image similarity engine further comprises a non-fractal based unconstrained image understanding processor.

12. The interactive device of claim 1, wherein the device is embedded in a toy.

13. The interactive device of claim 1, wherein the device is embedded in security monitoring equipment.

14. The interactive device of claim 1, wherein the device is embedded in educational equipment.

15. A method for a device interacting with an environment, the device receiving visual inputs from the environment and providing an output according to the visual inputs received, comprising the steps of:

sensing an external image;

calculating a similarity score based on a comparison between the external image with at least one stored image;

if the similarity score is bigger than a predefined threshold score, generating a new event object; and

executing an event action associated with the new event object.

16. The method of claim 15, further comprising the steps of:

detecting a duration of the external image that is sensed by an image sensor; and

if the duration is bigger than a predefined time threshold, generating a new event object.

17. The method of claim 15, further comprising the steps of:

receiving environm ntal information; and

selecting an event action based on the environmental information.

18. The method of claim 17, further comprising the step of placing the event action into an event queue.

19. An interactive device that receives inputs from an environment and providing responses to a user, comprising:

an image sensing means for capturing an external image of an object;

an image similarity comparing means for comparing the external image to a plurality of stored images, the image similarity comparing means providing a similarity score based on the comparison of the external image to a stored image; and

an event processing means for creating a new event when the similarity score is bigger than a predefined threshold score, the event processing means executing an event action associated with the new event.